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CURRENT LITERATURE.

The families of plants.

The rapid advance in our knowledge of plants which has come from the wonderful development in appliances seems to demand a new general presentation of the plant kingdom. For the Phanerogams this is being undertaken in a masterly way by Drs. Engler and Prantl,¹ under whose editorship the best specialists are at work upon various groups of plants. The illustrations are abundant and most excellent, while the text is all that could be desired. The publisher is to be commended, not only for the handsome typography, but also for the very low price, which puts this invaluable work within the reach of almost every botanist. It appears in separate numbers, which come rapidly enough, but which hold no special relation to each other. Thus far the only completed parts are the second, fourth and fifth of the second volume, although several other numbers belonging to incompleting parts have appeared. A full discussion of the literature and anatomy of each family precedes the presentation of their classification, which includes the genera. Volume II, Part 2 (in 3 numbers), contains the *Gramineæ* by E. Hackel and the *Cyperaceæ* by F. Pax. Of the grasses 12 tribes are recognized, and 315 genera. In *Cyperaceæ* there are 65 genera, *Carex* being said to contain more than 500 species. Volume II, Part 4 (in 2 numbers), is more varied in its nature, containing several small groups, as follows: *Flagellariaceæ* (3 genera), *Muyacaceæ* (1 genus), *Xyridaceæ* (2 genera), *Rapateaceæ* (6 genera), and *Philydraceæ* (3 genera), by A. Engler; *Restionaceæ* (19 genera), *Centrolepidaceæ* (6 genera), and *Eriocaulaceæ* (6 genera), by G. Hieronymus; *Bromeliaceæ* (40 genera), by L. Wittmack; *Commelinaceæ* (25 genera), and *Pontederiaceæ* (6 genera), by S. Schönland. Volume II, Part 5 (in 4 numbers), contains *Juncaceæ* (7 genera), by F. Buchenau; *Stemonaceæ* (3 genera, among which is our *Croomia*), *Liliaceæ* (193 genera), by A. Engler; *Hæmodoraceæ* (9 genera), *Amaryllidaceæ* (71 genera), *Velloziaceæ* (2 genera), *Taccaceæ* (2 genera), *Dioscoreaceæ* (9 genera), and *Iridaceæ* (61 genera), by F. Pax. The *Smilaceæ* are included under *Liliaceæ*, while *Androstaphium* Torr. is re-

¹ ENGLER, A., and PRANTL, K.—Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten insbesondere den Nutzpflanzen. Volume II, Parts 2, 4 and 5. 8vo. Copiously illustrated. Leipzig: Wilhelm Engelmann, 1887. Subscription price M 1 50.

ferred to the Mexican *Bessera* Schult., *Hesperanthes* Baker to *Anthericum* L., *Hastingsia* Watson to *Schœnolirion* Torr. *Oakesia* Watson to *Uvularia* L., and *Prosartes* Don. to *Disporum* Salisb.

Adaptations to pollination.²

New methods of pollination are by no means readily discovered to-day, especially in so well-explored a field as Europe; but many details remain to be worked out, even in some of the best understood species, and the varying adaptations of the same species in separate localities, and the different behavior of their visitors under different conditions, still offer profitable occupation for good observers. The paper before us deals with some of these minor questions, relating to 176 species of the Giant Mountains of Germany.

Perhaps the most generally interesting part of the work is that relating to the Umbelliferae, represented by 36 species. In volume vii of the GAZETTE attention was called to the seeming protogyny of *Erigenia*, *Sanicula*, and one or two other genera of this group, although some hesitancy was felt about accepting this as fully demonstrated. In a number of species studied by Schulz the styles are well developed when the flowers open, but the stigmas are said to be really unreceptive in the early stages of blooming in all of these apparent cases of protogyny. Yet, while truly protogynous Umbelliferae appear to be still unknown (with the doubtful exception of *Erigenia*), the number of synœcic species is considerably increased. One is also struck by the large proportion in this list of Umbellifers with staminate flowers in addition to those that are hermaphrodite. The rudimentary umbellet of red flowers in the common carrot (present in only about one-sixth of the individuals examined) has proved quite as serious a puzzle to this observer as to others, whose explanations, however, are not satisfactory to him.

Much of the remainder of the paper is taken up with useful notes on the different forms of flowers in species of Caryophyllaceae and Labiatae, but nothing essentially new in principle is added. The part actually played by insects in pollination is brought in for very little comment, though some care has evidently been given to this class of observations.—W. T.

De Bary on bacteria.

The literature of bacteria is increasing with astonishing rapidity, both in the form of magazine articles and pamphlets and of bound volumes. Among all this array of facts and opinions, put together with multiplicity of details and bewildering uncertainty as to the relative credence to be accorded the various authors, the task of forming a well balanced and serviceable conception of the present state of the science of bacteriology

²SCHULZ, AUG.—Beiträge zur Kenntniss der Bestäubungseinrichtungen und der Geschlechtsvertheilung bei den Pflanzen. (Bibliotheca Botanica, Heft 10.) 104 pp. 1 pl. Cassel: Theodor Fischer, 1888.—M. 8.

is well-nigh insurmountable for all but a few specialists. To have one in whom the utmost confidence can be placed go over all the ground, and carefully state the main facts with their true perspective--in short, to bring out a satisfactory orientation of the subject, using simple and attractive language, is a much needed service. It is no less than this that De Bary, whose recent death has been so great a loss to the scientific world, has done in the publication of his lectures under the title, *Vorlesungen über Bacterien*. This work, issued in 1885, met with an extended sale, calling for a second edition the following year. Another year saw it in English dress,³ being translated by Mr. Garnsey, and revised by Prof. Balfour, who have been associated in giving us excellent English versions of several other standard German works.

An extended notice of the first German edition was given in this journal for May, 1886, which makes it unnecessary to occupy much space at this time. The work is remarkably clear in expression, concise and masterful in the selection and arrangement of subject matter, and has been put into an attractive and handy form by the publishers. It is specially noteworthy that the English volume in form and size is more satisfactory than, and in other respects quite equal to, the German, which is good fortune that rarely accompanies the translation of botanical works.

Instead of enumerating the various topics treated, it will suffice to say that the work gives a view of the whole field of the science, with particular, although brief, treatment of many of the more prominent and debatable questions, and a special examination of the relation of bacteria to fermentations and other chemical changes, and to the production of disease in plants and animals. A valuable bibliography and an index complete the volume.

Minor Notices.

THE "CENTRAL EXPERIMENTAL FARM" of the Department of Agriculture of Canada devotes its third bulletin⁴ to the smuts attacking wheat and remedies for the same. *Tilletia caries*, *T. lævis* and *Ustilago carbo* are described and figured. Copper sulphate solution, strong brine and a weak alkali are recommended as preventives when applied to the seed wheat before sowing.

MISS NEWELL has prepared a very useful series of outlines of lessons in botany,⁵ which is now being issued in parts. The lessons outlined are intended for children 12 years old and upward. They follow the order

³DE BARY, A.—Lectures on bacteria; second improved edition. Translated by Henry E. F. Garnsey, M. A.; revised by Isaac Bayley Balfour, M. A., M. D., F. R. S. 193 pp., 20 wood engravings, 12mo. Oxford: Clarendon Press, 1887. [Macmillan & Co., New York.]

⁴FLETCHER, JAMES—Smuts affecting wheat (Bull. III, Cent. Exp. Farm), pp. 15, fig. 7. 8°. Ottawa, Dep't of Agriculture, Mch. 15, 1888.

⁵NEWELL, JANE H.—Outlines of Lessons in Botany, for the use of teachers or mothers studying with their children. Parts 1—4. Square 12mo. [Cambridge, Mass.: the author.] Printed at the Salem Press, Salem, Mass.

of Dr. Gray's "Lessons" and "How Plants Grow," and are designed to be used in connection with these books. No doubt they will prove very suggestive to teachers of the little folks. Certainly, the subjects they treat are much more suitable pabulum for youngsters than the histology proposed by Mrs. Knight in her "Primer of Botany."

DR. GRAY'S last Contribution⁶ is before us, being a continuation of one in the last volume of the *Proc. Am. Acad.* it contains his notes upon the Rutaceæ, and only the beginning of Vitaceæ. Cneoridium is restored to Rutaceæ on account of its glands. Xanthoxylum is shown to be proper, and not Zanthoxylum. Amyris (formerly in Burseraceæ) is transferred to Rutaceæ, and a new species from Texas described. The only thing touched upon under Vitaceæ is Ampelopsis, which Dr. Gray retains as a genus, with *A. quinquefolia* as the type, thus not accepting Planchon's Parthenocissus, nor his definition of Ampelopsis.

NOTES AND NEWS.

PROF. THOS. C. PORTER sails for Europe May 26.

DR. J. PANCIC, of the Botanic Gardens of Belgrade, died March 8, at the age of seventy four years.

PROF. B. D. HALSTED has an interesting paper in the *Popular Science Monthly* (April) upon "California dry-winter flowers."

DR. PRANTL, called to the Eberswald school of forestry to succeed Dr. Luerssen, has declined, and will remain at Aschaffenburg.

THE ANNOUNCEMENT of the Shaw School of Botany for 1887-8 shows an attendance of 43 special students during 1887-26 in the spring and 17 in the fall.

NEW SPECIES of North American Phanerogams are described by Dr. N. L. Britton in *Bull. Torr. Club* (April), chiefly Cyperaceæ, together with critical notes upon certain noteworthy species.

THE FORESTRY DIVISION of the Department of Agriculture has issued a short circular on methods of increasing the durability of timber whose admonitions would be of value to wood consumers—if they would heed them.

PROF. E. L. GREENE, continuing his bibliographical notes in *Bull. Torr. Club* (April), replaces *Gleditschia monosperma* Walt. by the prior *G. inermis* Mill; and the western *Hesperochiron Californicus* Watson by *H. nanus* Lindl.

THE RUMOR that Dr. Graf zu Solms-Laubach was to succeed Dr. De Bary at Strasburg is confirmed. He has declined the call to Berlin, and will enter upon his work at Strasburg at the beginning of the summer semester.

⁶ GRAY, ASA.—Notes upon some polypetalous genera and orders. *Proc. Am. Acad.* XXIII, pp. 223-227. Issued April 19, 1888.